

REMARKS

Claims 1 and 2 are pending in the application.

Specification

Minor changes have been made to the specification to place it in better form for U.S. practice.

Drawings

The drawings have been amended so that they are consistent with the statements in the specification.

The Examiner is respectfully requested to approve these drawing changes.

An Embodiment of the Present Invention

An embodiment of the present invention is directed to an engine control system that includes: a NOx catalyst containing ammonia as a reducing agent, provided in an exhaust system of an internal combustion engine, and selectively reducing NOx from exhaust gases; a reducing agent supply providing the reducing agent to the exhaust system and positioned upstream of the NOx catalyst; a NOx sensor detecting an amount of NOx in the exhaust gases emitted by the internal combustion engine; a fuel injection system injecting fuel to the internal combustion engine in one of a main injection mode performing a main injection and a pilot-and-main injection mode performing a pilot injection and the main injection, the pilot injection proceeding the main injection; and a control

unit activating the fuel injection system in the pilot-and-main injection mode to increase a  $\text{NO}_2/\text{NOx}$  ratio in the exhaust gases when a  $\text{NOx}$  purifying efficiency ( $\eta$ ) is equal to or below a preset  $\text{NOx}$  purifying efficiency ( $\eta_L$ ).

Claim Rejections - 35 U.S.C. § 102

Claims 1-2 have been rejected under 35 U.S.C. § 102(b) as being anticipated by Fraenkle et al. (USP 5,845,487). This rejection is respectfully traversed.

Fraenkle discloses an engine control system that includes, a catalytic converter 4 provided in an exhaust system of an internal combustion engine, a reducing agent supply unit 5, 7, 8 for providing reducing agent to the exhaust system, a  $\text{NOx}$  sensors 19, 20 for detecting an amount of  $\text{NOx}$  in the exhaust gases at an upstream and downstream of the catalytic converter 4, an injection regulating unit 6 capable of injecting fuel in one of an early start of fuel injection (corresponds to the "main injection mode" of the claimed invention of the present application) and a later start of fuel injection (corresponds to the "pilot-and-main injection mode" of the claimed invention), and a control unit 10 for activating the injection regulating unit 6 in one of the early start of fuel injection and the later start of fuel injection.

As stated in col. 5, lines 4-11, Fraenkle switches to the late start of fuel injection when the temperature of the catalytic

converter is below a minimum temperature to ensure low nitrogen-oxide emission inside the engine. Fraenkle, however, does not activate "the fuel injection system in the pilot-and-main injection mode to increase a  $\text{NO}_2/\text{NO}_x$  ratio in the exhaust gases when a  $\text{NO}_x$  purifying efficiency ( $\eta$ ) is equal to or below a preset  $\text{NO}_x$  purifying efficiency ( $\eta_L$ )." Accordingly, Fraenkle does not disclose or suggest the "control unit" as recited in claim 1.

Claim 2, dependent on claim 1, is allowable at least for its dependency on claim 1.

The Examiner is respectfully requested to reconsider and withdraw this rejection.

#### Conclusion

Accordingly, in view of the above amendments and remarks, reconsideration of the rejections and objections, and allowance of the pending claims are earnestly solicited.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Maki Hatsumi (Reg. No. 40,417) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any

overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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Attachment(s): Two (2) Replacement Drawing Sheets (Figs. 6 and 7)

AMENDMENTS TO THE DRAWINGS

Attached hereto are two (2) sheets of formal drawings that comply with the provisions of 37 C.F.R. § 1.84. The corrected drawings incorporate the following drawing changes:

In Fig. 6, --NO-- has been added to a line connecting steps sc and sd;

In Fig. 7, "FigL" in step a1 has been amended to --FlgL--; and

"FlGL" in step a3 has been amended to --FlgL--.

It is respectfully requested that the corrected drawings be approved and made a part of the record of the above-identified application.